Department of LABOR AND INDUSTRIES

in association with

ROOFING CONTRACTORS ASSOCIATION OF WASHINGTON

presents

POCKET GUIDE TO SAFETY

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POCKET GUIDE TO SAFETY

This Pocket Guide to Safety is designed to:

- help employers and employees in residential construction do their jobs safely
- help employers and employees in residential construction comply with WISHA standards

This Pocket Guide to Safety does not replace any or cover all of the requirements detailed in the actual WISHA regulations. The Pocket Guide should only be used as a companion to the actual regulations.

If there is any inconsistency between the Pocket Guide and the WISHA regulation, the WISHA regulation will always prevail. This Pocket Guide should never be considered a substitute for any provisions of a regulation.

This publication is a revision of the NRCA's Pocket Guide to Safety to bring it up-to-date with WISHA regulations. It is intended for employers and employees in the State of Washington.

If you are interested in purchasing the original publication (based on OSHA regulations), contact the National Roofing Contractors Association at www.nrca.net.

Some photos courtesy of Microsoft Design Gallery Live. Visit them at http://dgl.microsoft.com

EMERGENCY TELEPHONE NUMBERS

Whenever you arrive at a new job site, make sure someone knows the location of area hospitals and emergency centers and the local emergency telephone number. (Remember, it's not always 911.)

You may want to record the following telephone numbers:

_____

COMPANY OFFICE

_____

SUPERVISOR

_____

LOCAL EMERGENCY NUMBER

TABLE OF CONTENTS

1 – THINK SAFETY

All employers have to give new employees a safety orientation when they are hired. The orientation will cover several safety topics, including a review of the employer's total safety program (or Accident Prevention Program).

After the initial orientation, safety meetings must be held at the beginning of each job and weekly thereafter.

- Use safe practices.
- Ask if you don't understand something.
- Don't take chances or shortcuts.
- Help others learn safe work practices.
- Watch out for the safety of other workers.
- Plan your work to avoid injuries.
- Always limber up by stretching before starting work.
- Keep your mind on your job.
- Be in good physical condition before starting work.
- All injuries must be reported immediately.
- Do not smoke on the job when flammables are present.
- No drinking alcoholic beverages, drug use, fighting or horseplay is allowed on the job or on the employer's premises.

Remember: If you are unsure of something, contact your supervisor.

1A – Your Responsibility

Conduct yourself in a manner that reflects favorably on yourself, your employer and your industry at all times. Extreme care must always be taken to avoid exposing the public to any danger from hoisting, fire or trip hazards. Be aware of children because they are often attracted to construction sites during the day and after hours. Provide protection by:

- securing the lid and spigot or outflow valve on the kettle at night;
- locking or securing trucks and hoisting equipment;
- removing the ladder to prevent access to the roof;
- removing or securing chemicals, adhesives, solvents and flammables; and
- looking around the job site for other potential hazards and ways to prevent them.

A worker who is not safety conscious is a danger to himself and everyone around him. Leaving tools, equipment and materials lying around, particularly near the roof edge, is inviting someone to trip and fall. A worker who treats hot stuff carelessly can splash himself and others. How do you think you'd feel if you were the cause of an accident where a fellow roofer was burned?

Think about it.

1B – Wear Proper Personal Protective Equipment

Wearing the proper personal protective equipment protects against personal injury.

FOR BUILT-UP ROOFING:

- Long pants with no cuffs that cover the top of the boot
- A long-sleeved shirt, buttoned at the cuff and within one button of the collar
- Boots with thick rubber or composite soles
- Gloves with a snug-fitting cuff
- Goggles or safety glasses
- Full face shield when using a kettle or when handling a hot lugger

FOR SINGLE-PLY ROOFING:

- Long pants with no cuffs that cover the top of the boot
- A long-sleeved shirt, buttoned at the cuff and within one button of the collar
- Boots with thick rubber or composite soles
- Gloves with a snug-fitting cuff
- Goggles or safety glasses

FOR SHINGLES:

- Long pants with no cuffs that cover the top of the boot
- Gloves with a snug-fitting cuff
- Boots with thick rubber or composite soles

FOR SPRAY-APPLIED FOAM:

- Long pants with no cuffs that cover the top of the boot
- Gloves with a snug-fitting cuff
- A long-sleeved shirt, buttoned at the cuff and within one button of the collar
- Boots with thick rubber or composite soles
- Goggles or safety glasses

FOR SHEET METAL:

- Long pants with no cuffs that cover the top of the boot
- Gloves with a snug-fitting cuff
- Boots with thick rubber or composite soles
- Goggles or safety glasses

FOR MODIFIED BITUMEN:

- Long pants with no cuffs that cover the top of the boot
- Cotton or leather gloves with a snug-fitting cuff
- A long-sleeved shirt buttoned at the cuff and within one button of the collar
- Goggles or safety glasses
- Full face shield for kettle use or when handling a hot lugger
- Boots with thick rubber or composite soles

In addition, remember the following:

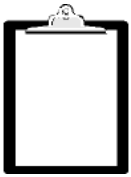
- Wear a hard hat whenever there is a hazard from above.
- Do not wear rings on fingers or any other type of jewelry.
- Do not wear earphones because you will not be alert to verbal warnings or requests for help from other workers.

Check with your supervisor on each job to find out if you will need to use any of following:

- Rubber gloves when working with chemicals, solvents or adhesives
- A respirator
- Goggles or a face shield

For further information on eye protection, see Part 2.

1C – Injury Reporting



Any time you are cut, burned or injured in any way, immediately report it to your supervisor. Report the injury even if you don't have to see a doctor. For insurance purposes, it is very important to your employer to have timely and accurate details of how the injury occurred. Providing accident information to your employer will help to prevent similar accidents in the future. Always carefully explain what happened. Don't jump to conclusions or try to blame anyone for the accident. Just describe what happened.

Your employer will need your assistance in filling out an accident report. Remember to carefully and honestly describe what happened.

2 – EYE PROTECTION

An eye injury or worse yet, the loss of eyesight is something everyone fears. That is why it is so important to use proper eye protection. You can minimize the risk of eye injury by wearing proper eye protection.

The types of eye protection commonly used in roofing are:

- Safety glasses (clear, prescription or tinted) with side shields
- Goggles
- Face shields

Here are some tips on avoiding eye injuries:

- Hot stuff, chemicals, power tools, flying nails and tear off debris are some of the biggest hazards to the eyes. Always wear the proper eye protection when around these hazards.
- Face shields and goggles should be carefully adjusted for fit and comfort. Your eye protection should be clean and available for immediate use.
- Kettle operators must wear a full face shield. For additional safety, it is recommended that goggles be worn under the shield.
- A welding face shield with appropriate shaded lenses should be worn during any welding operations.
- Goggles must be worn during roof cutting, spudding, tear off and roof vacuuming operations.
- Plan ahead; make sure the operators around you are not exposed to eye hazards.
- Learn basic first aid treatment for an eye injury.
- Always know where the eye wash bottle and first aid kit are located.
- Tinted safety glasses, where appropriate, may reduce stress on the eyes.

Remember: Eye protection doesn't do any good unless you use it.

3 - MAKING A JOB SITE SAFE

Safety should always be on your mind! Many hazardous conditions can be eliminated when you set up safely and if you **think** safety.

- Minimize the exposure to the building and pedestrians by using barricades, flashing lights and signs when necessary.
- Locate equipment where fumes and dust will not be drawn into fresh air intakes and windows of nearby buildings.
- Check to be sure that you have a first aid kit and fully charged fire extinguisher. Know their locations.
- Maintain proper clearance from all power lines. Notify the electric company so that overhead wires can be covered or de-energized, if necessary.
- Find out where the nearest hospital, infirmary or ambulance service is located. Post the telephone numbers where you will be able to find them in a hurry.

3A – Housekeeping

One of the easiest ways to prevent accidents is to maintain a neat and orderly job site. Professional roofing crews take pride in maintaining a clean work site.

- Materials must be neatly stacked and placed away from foot traffic.
- Materials and equipment should not be stored within 6 feet (1.83 m) from the edge of the roof.
- Tools and equipment must be put away after use.
- Where necessary, wheels on rolling equipment should be blocked.
- Trash and scraps are fire hazards and must be collected and disposed of immediately.
- All flammable liquids must be stored in an approved safety can.

The kettlemen must give particular attention to the orderliness of the kettle area.

- Place a large sheet of plywood or cardboard under the kettle.
- Dispose of wrappers and tins promptly.
- Keep the materials stacked and organized.
- Make sure the propane cylinders are tied or chained upright at least 10 feet (3.05 m) from the kettle.
- Clean up any spilled fuel or flammable liquids.
- Kettle lids should open away from buildings to help keep fumes away from the buildings.

3B – Check the Deck

- Be sure that a new deck is properly secured.
- Before tearing off, check the underside of the deck for dangerous areas.
- A good faith survey to determine the presence of asbestos may be required - verify if it has been done and follow proper procedures if asbestos is present.

  Check the underside of the deck for electrical wires, equipment and asbestos.
- Frost, snow and rain can make a deck very slippery. **Proceed with caution!**
- Floor holes and openings must be covered and marked, guardrails must be erected around it or workers must wear personal fall arrest equipment.
- A cover must be secured and able to withstand twice the intended load of workers and equipment.
- Do not remove a cover without the okay of your foreman. Immediately re-cover the hole when the roofing or flashing work is complete.
- Always properly secure any loads stored on the roof deck.
- Avoid point loading of roof decks.

4 – WEATHER ISSUES

During outdoor work, such as roofing, weather is always a concern. If severe weather strikes, know what to do to protect yourself, your coworkers, equipment and materials. Watch for changing weather. If possible, listen to weather forecasts on the radio; this can provide you with advance warning of severe wind or rain. Most importantly, listen to your supervisor. If he or she tells you to come off the roof, don't wait; make your way to shelter immediately.

Your first responsibility is to ensure the safety of yourself and your fellow employees. However, if possible, try to prevent property damage to equipment, materials and the building itself. This may require placing a tarp over equipment or exposed areas of the roof before a storm hits. Taking the time to prevent water or wind damage can save thousands of dollars in property damage.

4A – Rain

- Wear shoes that won't slip in wet weather.
- Wear appropriate rain gear that will keep you dry.
- If you encounter lightning, high winds, hail or heavy rain, seek shelter immediately.
- If possible, cover any materials, tools or equipment with plastic sheeting, tarps or other waterproof material to prevent water damage. Have enough to cover any exposed areas of the roof to prevent water damage to the roof or the interior of the building.
- Make sure any roof drains are clear of debris and unplugged. Good housekeeping will help roof drains remain clear of debris.

4B – Wind

Wind can be the most dangerous element you will face in roofing. It is important that you understand the hazards and know how to avoid injury.

- If possible, secure any materials on the ground and those that could be blown off the roof.
- If your supervisor warns you to leave the roof, do so immediately; don't wait to finish another duty.
- Watch for severe weather approaching.
- Leave the roof if excessive winds pick up. Seek shelter immediately.

- Remember, the most important wind damage issues are:
  - lightweight insulation storage
  - partially completed single plies that may not be completely fastened

5 – FALL PROTECTION

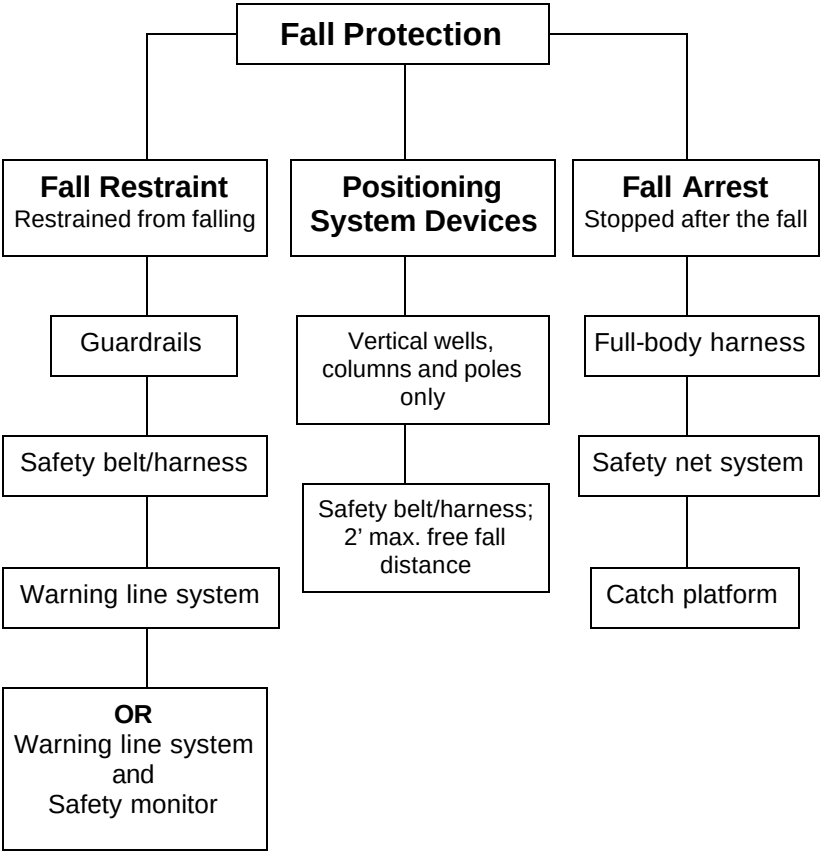
One of the greatest hazards that a roofer faces is falling. As a result, it is very important that proper fall protection measures be used. Falls happen very quickly. The best way to avoid a fall is to use fall protection before an accident occurs.

Fall protection is required for both steep-slope and low-slope roofing. A steep-slope roof is one with a slope greater than 4-in-12 (vertical to horizontal). A low-slope roof is one with a slope less than or equal to 4-in-12 (vertical to horizontal).

WISHA requires that some type of fall protection be used and that a Fall Protection Work Plan be completed whenever there is a level-to-level distance of 10 feet (3.05 m) or more. This section is intended to provide you with a brief description of various fall protection methods and how they prevent falls when properly used.

5 – FALL PROTECTION

Fall protection will be provided either through the use of a fall arrest system or a fall restraint system as shown below and thoroughly described in the fall protection work plan available on site for review.



5A – Fall Protection Work Plan

A Fall Protection Work Plan must be developed whenever an employee will be exposed to a fall hazard of 10 feet (3.05 m) or more. The fall protection work plan must be:

- jobsite-specific
- in writing
- available on the work site

The Fall Protection Work Plan must address the following items:

- Identify all fall hazards in the work area
- The method you and your employees will use to eliminate and control the fall hazards
- Correct procedures for assembly, maintenance, inspection and disassembly of fall protection systems used
- Correct procedures for handling, storage and securing of tools and materials
- The method of providing overhead protection
- The method for the prompt, safe removal of injured workers
- Training methods for the employees working on the jobsite

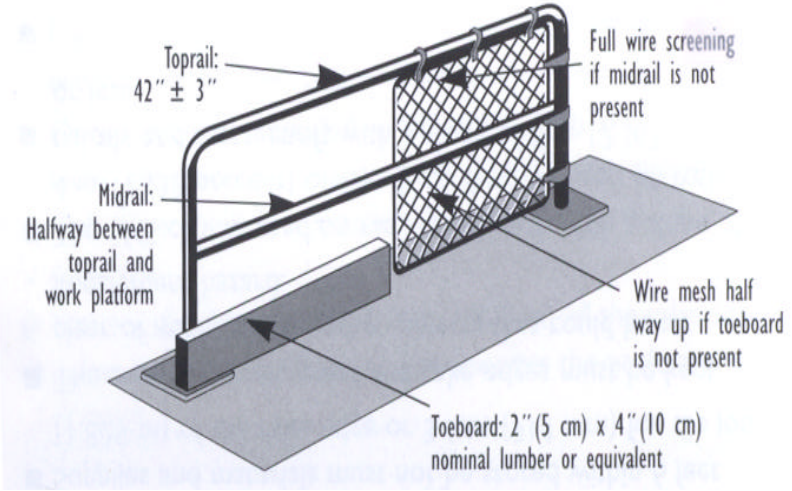
Employees must be trained on the elements of the plan and documentation of that training must also be available on site.

Before working at or above 10 feet (3.05 m), be sure to review your company's Fall Protection Work Plan for your specific work site.

5B – Guardrails

The requirements for a guardrail system are as follows (dimensions are shown on the drawing below):

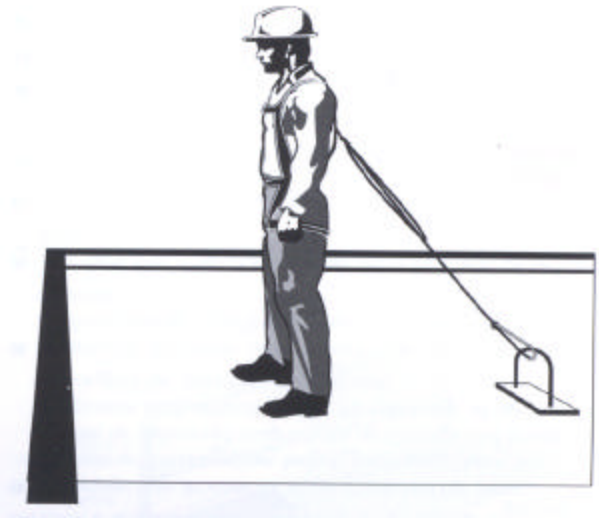
- The top rail must be able to withstand a load of 200 pounds with a minimum of deflection.
- The guardrail must not have surfaces that could puncture or lacerate employees or snag their clothing.
- If wire rope is used, it should be flagged every 6 feet (1.83 m).
- If a guardrail is used in a hoisting area, a chain, gate or removable guardrail must be placed across the opening when hoisting operations are not taking place.
- Steel or plastic banding cannot be used for top rails or midrails.
- Guardrails must be used at all material handling areas, such as hoists, trash chutes, crane landing areas and bitumen outlet pipes.
- Parapets must be at least 39 inches (1 m) high before guardrails are not required.



5C - Fall Restraint System

A personal fall restraint system consists of a safety belt or harness, lanyard and anchorage point.

- All safety belt and lanyard hardware must be capable of withstanding a tensile loading of 4,000 pounds (1,800 kg) without cracking, breaking or taking a permanent deformation.
- Anchorage points used for fall restraint must be capable of supporting 4 times the intended load.
- Restraint protection must be rigged to allow movement of employees only as far as the sides and edges of the walking/ working surface.
- Components of fall restraint equipment must be inspected before each use for mildew, wear, damage and other deterioration.
- Components found to be defective must be removed from service if their function or strength has been adversely affected.



5D – Warning Line System

The warning line system can be used to provide fall protection on roofs with slopes of 4-in-12 (vertical to horizontal) or less. The warning line system must be erected on all open sides of the work area and consist of stanchion posts with flagged wire, rope or chain.

- When mechanical equipment is not being used, the warning line must be erected at least 6 feet (1.83 m) from the roof edge.
- If mechanical equipment is being used, the warning line must be erected at least 6 feet (1.83 m) from roof edge parallel to the direction of travel and at least 10 feet (3.05 m) from the roof edge perpendicular to the direction of travel.
- Warning lines must have a minimum tensile strength of 200 pounds (90 kilograms).
- Warning lines should consist of a strong rope, wire or chain flagged at 6-foot (1.83 m) intervals with high visibility material and should be at least 36 inches (91 cm) but not more than 42 inches (1.07 m) from the surface.

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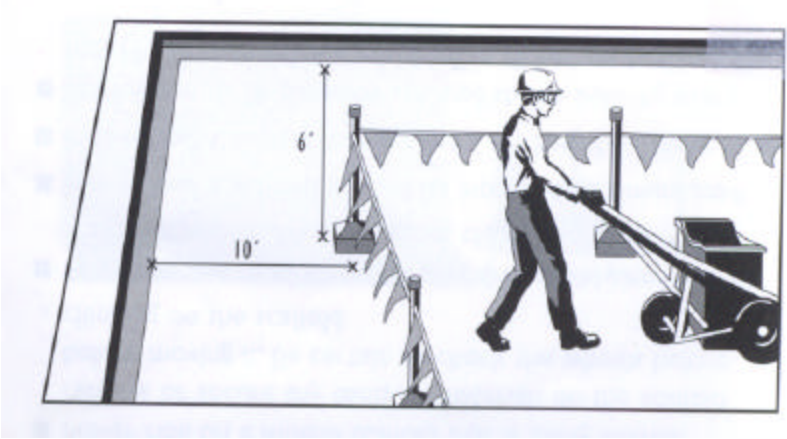


- The stanchions must be capable of withstanding 16 pounds (7.3 kg) of tipping force before falling over.
- Employees are not allowed to enter the area between the warning line and the roof edge unless performing work in that area.
- Access areas that are not in use should be blocked off with a rope, chain, wire or other barricade.
- Employees working outside of the warning line must be protected with a personal fall arrest system or a safety monitoring system.
- Do not store material or use mechanical equipment outside the warning line.

5E - Safety Monitoring System

The safety monitoring system (SMS) is a fall protection system where a competent person monitors workers and warns them when they are working in an unsafe manner or appear to be unaware of fall hazards. This system can be used as an exclusive fall protection system on roofs 50 feet (15.24 m) or less in width. It can also be used in conjunction with a warning line system (WLS) when crew members are working outside the warning line.
Mechanical equipment cannot be used or stored when using the SMS. The safety monitor system may not be used when adverse weather conditions create additional hazards.

The safety monitor must:

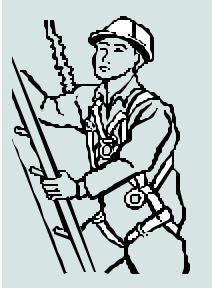
- be a competent person able to recognize potential fall hazards;
- have control authority over the work as it relates to fall protection;
- be instantly distinguishable from members of the work crew;
- be positioned to have a clear, unobstructed view of employees and be close enough to orally communicate with employees;
- supervise no more than eight exposed workers at one time;
- have no other duties; and
- warn the employee(s) when it appears that the employee(s) are unaware of a fall hazard or is acting in an unsafe manner.

When using the safety monitoring system, the following information must be included in the work site fall protection work plan:

- the name of the safety monitor; and
- his or her training in both the safety monitor system and warning line system

While working in the control zone, employees must wear highly visible, distinguishable and uniform apparel to distinguish them from other workers.

5F - Fall Arrest System



A personal fall arrest system basically consists of an approved Class III full body harness, a lanyard, a safety line and an anchorage point.

- Fall protection devices must be inspected for wear, damage or deterioration before each use. Check for broken or deformed snap hooks or D-rings. Defective components must be removed from service if their function or strength have been adversely affected.
- A personal fall arrest system that has been used to arrest a fall must be immediately removed from service and not used again until inspected and determined by a competent person to be undamaged and suitable for reuse.
- An anchorage must be able to support a weight of at least 5,000 pounds (2268 kg) for each worker attached. Anchorages may not be attached to platforms, guardrails or hoists.
- Avoid tying off around rough or sharp edges to protect safety lines and lanyards against being cut or abraded.
- An employee's fall must be limited to 6 feet (1.83 m).
- Employees who fall must be rescued promptly.
- Always use locking snap hooks or D-rings.
- If vertical lifelines are used, each person must be attached to a separate lifeline.
- The attachment point of the body harness must always be located in the center of the wearer's back near shoulder level, or above the wearer's head.
- Hardware must be drop forged, pressed or formed steel or made of materials equivalent in strength.
- Hardware must have a corrosion resistant finish and all surfaces must be smooth to prevent damage to the attached body harness or lanyard.

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- Fall arrest equipment should not be stored where it will be exposed to sunlight or extreme temperatures.
- Never use a body harness to hoist materials.
- Body belts may only be used as a fall restraint or positioning device (not for fall arrest).

5G - Safety Net System

Use of a safety net system is another fall protection option allowed by WISHA.

- The safety net should be installed as close to the working surface as possible, but not more than 30 feet (9.1 m) below it.
- Safety nets must not have any openings greater then 36 square inches (230 cm^2) or longer than 6 inches (15 cm) on any side.
- The safety net must be drop-tested after installation, relocation, repairs or at least every six months if not moved. The drop test should consist of a 400-pound (180 kg) sandbag dropped from the working surface.
- Safety nets should be installed with enough ground clearance so that a person falling into the net will not touch the ground.
- Defective nets may not be used. Nets must be checked for defects weekly and after any occurrence.
- Objects that fall into the net must be removed immediately.

5H - Catch Platform

- A catch platform must be installed within 10 vertical feet (3.05 m) of the work area.
- The catch platform width must be equal to the distance of the fall, but must never be less than 45 inches (114.3 cm) wide and must be equipped with standard guardrails on all open sides.

51 – Scaffolds

- Inspect the scaffold before starting work to make sure the handrails, midrails, toeboards and decking are in place.
- A scaffold may only be erected, moved, altered or dismantled under the supervision of a competent person.
- Maximum feasible fall protection must be used when erecting or dismantling scaffolds.
- The base of the scaffold should be firmly in place and on a level area; the wheels on movable scaffolds should be locked.
- Place a toeboard on the scaffold when using tools or other objects that could fall.
- The working level of scaffolding must be completely planked. The planks should be placed so there is no space between them to allow tools or materials to fall through.
- Scaffolds 10 feet (3.05 m) or more in height must incorporate a fall protection system consisting of guardrails or personal fall arrest systems.
- Never place ladders or other makeshift devices on scaffolds to access higher elevations.
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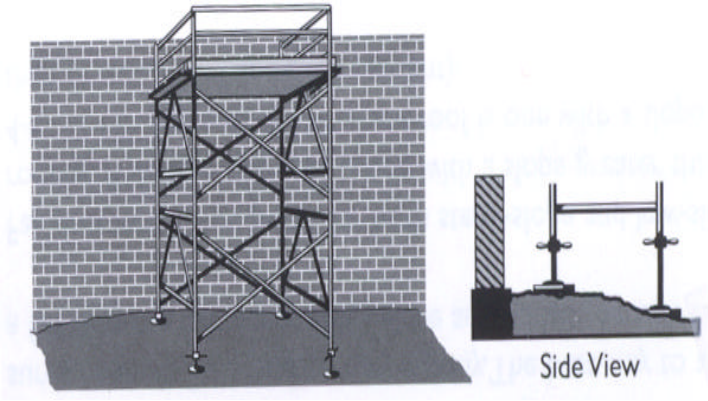
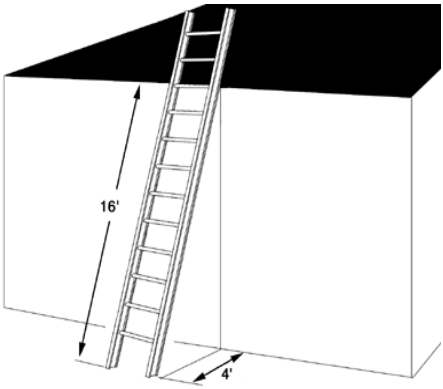


- Use a ladder or stairs to climb a scaffold.
- Never ride on a mobile scaffold that is being moved; remove or secure any tools or materials on the scaffold before moving it. Be certain to chock the wheels before climbing on the scaffold.
- Always be aware of electrical lines and make sure that the scaffold never touches or comes close to one.
- Never load a scaffold beyond its intended maximum load.
- Mobile scaffolds must not exceed a 4:1 height-to-width ratio.
- Scaffolds must be properly secured to the building every 26 feet (7.93 m) vertically and 30 feet (9.14 m) horizontally.

5J – Ladders

- Portable ladder side rails must extend 3 feet (90 cm) above the landing surface and be secured at the top to prevent slipping.
- Always inspect the ladder, rungs and rails at regular intervals for any cracks, defects or corroded materials. Any ladders found to have defects must be taken out of service and tagged "Do Not Use."
- Never use a ladder with split or missing rungs.
- Never use a ladder with grease, oil or any other slippery substance on the rungs or rails.
- Ascend and descend while facing the ladder.
- Do not carry anything up or down a ladder that could cause a fall. Both hands must be free to hold the ladder.
- Check to make sure you don't exceed the manufacturer's intended load limitations.
- The area around the tope and bottom of the ladder must be kept clear.
- Do not use a step ladder as a straight ladder.
- All ladders must be equipped with safety (non-skid) feet.

- The ladder base should be 1 foot (.3 m) away from the building for every 4 feet (1.2 m) in vertical height.



6 – SHEET METAL OPERATIONS

- Sheet metal should be stacked neatly to prevent sliding or falling.
- Bundles of sheet metal should be handled with mechanical equipment, such as hoists, conveyors and cranes.
- When loading and unloading sheet metal, be aware of electrical lines and maintaining proper distances.
- Properly secure stored sheet metal, especially copper or aluminum as they are theft risks.
- Keep the area clear of any accumulation of scrap sheet metal or debris.
- All personnel who operate mechanical equipment must be trained. Mechanical presses must be properly guarded.

6A – Sheet Metal Personal Protective Equipment

- Always wear gloves when handling sheet metal. Gauntlet-type gloves with wristlets can provide added protection to wrists and forearms. Sheet metal has very sharp edges - be careful when handling! Power shears must be properly guarded to keep your fingers and hands away from the blade.
- Wear boots with thick rubber or composite soles.
- If there is a potential for chemical splashes or if there is a danger of flying objects, safety glasses or goggles must be worn.
- When welding, always wear leather gloves, a welding face shield with properly tinted lenses and an apron.
- If there is a potential for falling or flying objects, hard hats must be worn.
- Use ear plugs or other hearing protection if there are excessive noise levels.

6B – Welding and Torch Cutting

- Employees must be trained before operating any welding equipment.
- When torch cutting, wear proper personal protective equipment, such as leather gloves, a leather apron and a face shield with properly tinted lenses.
- Inspect all equipment prior to use, including any compressed gas cylinders, hoses, regulators and torches. Any defective parts must immediately be taken out of service.
- Check the valves for dirt or debris.
- An ABC-rated fire extinguisher (see section 12C for an explanation of fire extinguisher ratings) must be located within easy access during any welding or cutting operations.
- Make sure there are no flammable materials or oily rags located near the welding or cutting operation. Remember to check for and be aware of flammable vapors that may be present.
- When you have completed your welding job, always turn off the acetylene and oxygen at the tanks.
- Conduct welding and soldering operations in well-ventilated areas. Respiratory protection may be required. Check with your supervisor.
- Never cut or weld on a tank, drum or other container, unless it has been thoroughly cleaned and inspected by a supervisor.
- Arc welding requires the use of appropriately tinted eye protection to protect against the bright light generated.

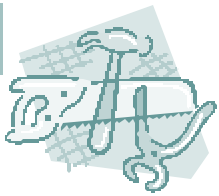
7 – EQUIPMENT SAFETY

The proper use of equipment and tools will make your job safer and more efficient. Before using tools, make sure you have been properly trained and fully understand their operation. Improperly maintained tools and equipment lead to accidents, so please take the time to learn how to properly care for them.

Here are some general safety tips regarding the use and maintenance of tools and equipment:

- Inspect tools and equipment before and after each use for defects or problems.
- Immediately remove from service any tagged item that needs attention.
- Always lock-out and tag-out a machine before repairing or cleaning it.
- Always select the right tool or equipment for the job; don't take shortcuts.
- Always use appropriate personal protective equipment.
- Always be sure that the guards are properly in place and working properly.

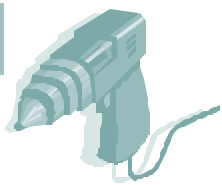
7A – Hand Tools



Hand tools are those that are manually powered, including everything from screwdrivers to hand-saws.

- Do not use any tool with a cracked, loose or splintered handle.
- Wear appropriate personal protective equipment, such as safety glasses and gloves.
- Never use a tool as a pry bar (unless it is intended for that purpose).
- Maintain tools in good condition, e.g., properly sharpened, cleaned and lubricated.
- Be aware that sparks caused by metal hand tools can be an ignition source for nearby flammables.
- Do not use chisels with mushroomed heads.

7B – Power Tools



There are several types of power tools commonly used in roofing. Power tools are those powered pneumatically or by electricity, gasoline, hydraulics or gun powder.

- Consult the owners manual for proper use, maintenance and repair instructions.
- Never carry a tool by its cord or hose.
- Wear eye and hearing protection, as required.
- Never operate power tools while wearing loose clothing, jewelry or anything else that could catch in moving parts.
- Never remove safety guards, except during maintenance and cleaning. When you do remove a guard, immediately replace it upon completion. Never turn the tool on while the guard is removed.
- Never modify safety guards.
- Keep your fingers away from moving parts. Always turn off the equipment before removing any debris.
- Do not use or store tools in wet or damp locations.
- Operate gasoline tools only in a well-ventilated area or outdoors.
- Always use safety cans for flammable and combustible liquids.
- Turn off gasoline-powered equipment before refueling.
- Be aware of and warn others while operating a tool or piece of equipment that can shoot objects at very high speeds, such as pneumatic or powder actuated tools.

7C – Cranes

It is important to remember that anyone operating a crane must be competent and thoroughly trained. The operator must always know the weight of the load before lifting and whether it is within the weight capacity of the crane. All cranes must be inspected on a regular basis by a competent person. Critical parts such as slings, chains, ropes, hooks, hydraulic system components and other operating components must be inspected before each use. Inspection records must also be maintained.

- Load rating charts must be conspicuously posted on all equipment. Instructions or warnings must be visible to the operator while at the control station.
- Remember, if a crane has a telescoping boom, the load rating will change according to the boom length and angle: The load rating will decrease as the boom is extended and brought closer to the horizontal plane.
- Maintain a minimum distance of 10 feet (3.05 m) around power lines.
- Review all hand signals between the crane operator and other personnel responsible for transporting materials or equipment from ground to roof (see page 36). An illustration of the hand signals must be posted on the job site. If a view is totally
- obstructed, the use of wireless head sets or other two-way communications may be appropriate.
- Always plan a lift so that obstacle clearance is maintained and load restrictions are not exceeded.
- Outriggers on mobile cranes must be deployed onto a firm surface so as to level the crane.
- Slings, hoisting wires, chains and ropes must always be free of kinks.

(continued on next page)

- Check that the load is well-secured and balanced by lifting just off the ground for a moment before the lift.
- Never carry a load over people.
- Ground personnel must wear hard hats and stay out from under overhead loads.
- Be aware of any ground-level weight constraints from underground parking areas, basements or subway systems.
- Make sure the crane is resting on a surface that can handle the weight.


Raise Boom


Lower Boom


Extend Boom


Retract Boom


Stop


Emergency Stop


Hoist


Lower


Swing


Move Slowly

7D - Conveyors

- All conveyors must have an emergency shutoff, such as a pull cord. Before operating the conveyor, make a mental note of where the emergency shutoff is located in case of an emergency.
- Do not wear loose clothing, jewelry or other items that can become caught in conveyors.
- Never ride or climb a conveyor.
- Do not operate a conveyor unless you have been trained in its operation.
- Never load a conveyor beyond its capacity.

7E - Hoists

Inspect the hoist daily. Look for frayed cables, broken welds, bent struts or faulty mechanical parts. Make sure guards are intact and in place.

- If possible, set materials on a pallet to make handling them easier.
- Never leave a suspended load unattended.
- Slings, hooks and rigging should be inspected prior to each use.
- Check to make sure the hoisting area is free of debris.
- Use barricades to limit pedestrian travel near the hoisting area.
- Do not exceed the rated capacity of the hoist.
- Do not assume that your equipment is in the same condition as when you last used it.
- Rig loads with properly rated slings and safety hooks. Safety hooks must be equipped with a spring-loaded latch. Lift the load momentarily to check the securement of the load and its balance.
- Always use enough counterweight. As a rule of thumb, use 2 pounds (0.90 kg) of counterweight for every 1 pound (0.45 kg) of load. Do not use construction materials as counterweight, nor materials that flow, such as water or sand. Always follow the manufacturer's specifications.
- All ground personnel must wear hard hats. Stay out from under suspended loads.

7F - Maintenance

It is important to follow all proper maintenance procedures for tools and equipment. When maintenance procedures are not followed, the equipment wears out quickly and can become hazardous.

- Don't allow saws, blades and cutting tools to become dull. Sharpen them periodically, especially after heavy use.
- Check electrical equipment cords prior to each use for cut or frayed wires or loose or missing ground plugs.
- Consult and follow the manufacturer's owners manual for instructions on proper maintenance.
- Make sure all moving parts are properly oiled and greased.
- Any broken or defective equipment must be immediately tagged and taken out of service until it is properly repaired.
- Gasoline engines should have their oil changed at frequent intervals.
- Air-cooled engines must have their cooling fins kept free of asphalt and other debris. Make sure they are cleaned regularly.

7G - Forklifts

WISHA requires all forklift operators to be trained before driving a forklift.

- Make sure the backup signals, horns and lights are working properly before operating.
- Forklift drivers should always be aware of overhead structures.
- Be aware of any electrical lines and maintain a distance of at least 10 feet (3.05 m).
- Never allow anyone to ride on the forks or anyplace else where a seat has not been provided.
- Only stable or safely arranged loads should be handled.
- Turn off the engine when refueling.
- Never drive up to anyone standing in front of fixed objects, such as benches or walls. If you do not stop fast enough, you could pin them against the object.
- All ground personnel must wear hard hats and stay out from under loads.
- Do not place arms or legs between the mast and the forklift.
- Never leave a forklift with an elevated load unattended. You should lower the load, set the brakes and turn off the engine before leaving.
- Always block the wheels of the forklift and set the parking brake when not In use.
- All forklifts must have falling object protection (FOPS) for the driver.
- Wear the seat belt at all times if the forklift is equipped with one.

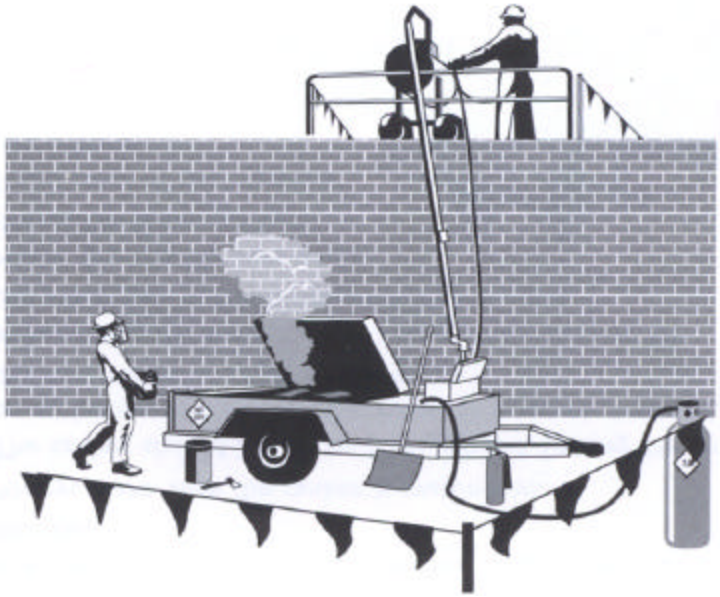
8 - HOT ASPHALT SAFETY

- The dangers associated with kettles and tankers are very real. These vessels contain materials, such as hot asphalt or coal tar, that need to be handled with extreme care. It is important to always follow safety requirements. **Always wear the proper personal protective equipment!**

8A - Kettle Safety

- The propane tanks should be secured in an upright position at least 10 feet (3.05 m) from the kettle.
- The kettle should be on level ground with the tongue leveled and wheels blocked.
- Make sure the kettle lid opens away from the building. Also, check to see that the lid fits tightly.
- A warning line should be set up around the kettle area to keep people away.
- Make sure the kettle is free of ice and water. Water inside the kettle can pop or flash once the asphalt is heated.
- Before firing up the kettle, make sure all the vents are open. Check all hoses, gauges, burners and other equipment for defects.
- Cut the bitumen into hand-sized pieces and place them carefully into the kettle. Always wear the appropriate PPE when loading the kettle.
- Never light a torch with a disposable lighter or matches. Use a spark lighter.
- Increase kettle temperature and add bitumen slowly. Never allow kettle tubes to be exposed. This can result in a fire or explosion.
- Keep any debris, discarded packaging or any combustibles neatly away from the kettle area.
- If there is a fire inside the kettle, close the lid and turn off the burners immediately.
- Open spigots and valves slowly. Be careful on windy days because hot bitumen can easily be blown around, causing burns.

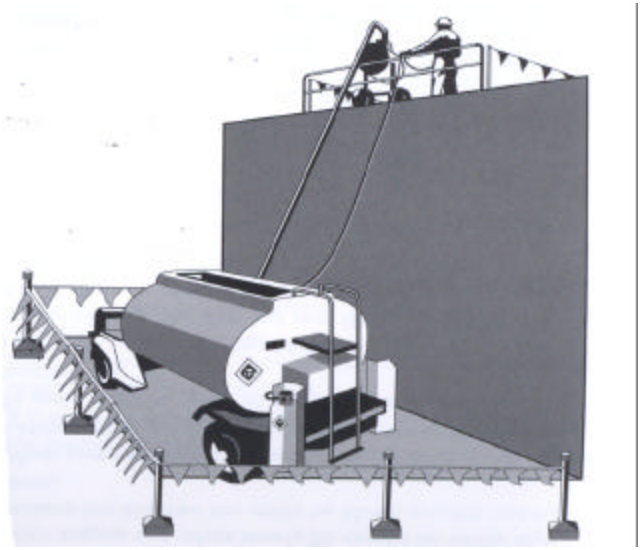
- When carrying buckets of hot asphalt or bitumen on sloped surfaces, do so with the bucket on the downhill side.
- To avoid splashes, never fill a bucket more than three-quarters full.
- Have a 20-pound (9.07 kg) ABC-rated dry chemical fire extinguisher on the roof and two 10-pound (4.54 kg) ABC-rated dry chemical fire extinguishers on the ground, within 30 feet (9.1 m).



8B - Tanker Safety

There are tanker safety precautions that are important to remember.

- Always make sure the tanker is water-free.
- The tanker should be set on level ground. Setting the tanker on an incline could cause the tubes to become exposed; this may result in a fire or explosion.
- When filling the tanker, allow enough room inside for the expansion of the bitumen during heating.
- Never fire the burners while the tanker is being filled.
- Stand clear of the manhole when filling.
- After filling, make sure the manhole cover is securely closed before moving the tanker.



- When firing up the tanker, there should be at least 6 inches (15.2 cm) of bitumen covering the tubes.
- Verify the accuracy of the automatic thermostat manually with a hand-held thermostat .
- Heat the tanker slowly, especially if there is cold bitumen inside.
- Never allow the vent pipe to become plugged. A building of vapors could cause an explosion.
- When transporting a tanker that has recently been emptied, allow enough time for the tubes to cool.
- Have two 20-pound (9.07 kg) ABC-rated fire extinguishers on hand.

8C - Hot Pipes

- Hot pipes should be set up as vertically as possible to avoid bowing.
- Make sure the pipes are clean and dry and all joints and unions are in good condition and secure.
- Insulating the pipes, especially during cold weather or where the pipe is extended a substantial distance, helps to maintain proper bitumen temperature and control excess fumes.
- The end of the pipe should be connected to a 120-degree elbow pipe and a flexible discharge hose.
- Never clean a pipe by heating it with a propane torch. The pipe can explode.
- Hot pipes that must be extended a substantial distance should be supported.
- Tie off the pipe to a guardrails or other support immediately after placing it on the roof.
- Guardrails should be erected at least 4 feet (1.22 m) on either side of the pipeline.
- If possible, it is a good idea to place a tarp on the side of the building next to the pipe to prevent leakage from hitting the building.

8D - Luggers

- Always make sure there is no water or moisture in the lugger. Keep the filler neck covered when not in use.
- Never fill a lugger or mop bucket more than three-quarters full. Anything over this limit is easy to splash or spill.
- Always chock the wheel or set the brakes while filling the lugger.
- Always check the path of travel and make sure it is level and clear of debris before moving the lugger.
- Be sure the lugger's wheels are free of debris and can turn easily to minimize the possibility of it overturning.
- Operators must wear appropriate PPE.

8E - Asphalt Fumes

Asphalt fumes can be an irritant of the eyes, nose, throat and lungs. However, by using good work practices, exposure to asphalt fumes by roofing employees and the public can be minimized.

- If possible, the kettle should be placed downwind of roofing employees and any occupied building.
- Keep the kettle and tanker openings closed as much as possible. This will allow the asphalt to heat quicker and keep fumes to a minimum.
- Use insulated hot pipes and luggers.
- Never overheat asphalt. Maintaining the kettle at the proper temperature (between 425°F [218°C] and 550°F [288°C]) prevents the emission of excessive amounts of fumes. Verify proper equiviscous temperature (EVT) ranges for the type of bitumen used.
- As a rule of thumb, check the asphalt packaging or manifest from the supplier if you are using a tanker, for the EVT and the flash point. You may heat the asphalt 50 degrees higher than the EVT, if necessary, as long as you stay 25 degrees below the flash point.
- It is important for rooftop workers to periodically check the temperature of the asphalt to ensure the proper EVT. Depending on the outcome, the rooftop worker must inform the kettlemen to raise or lower the temperature accordingly.
- Remember, the lower the temperature, the less fume is produced.
- If possible, air intakes and windows of buildings downwind of the kettle should be closed.
- Work upwind of the asphalt operation whenever possible.

9 –TRAINING REQUIREMENTS

Training Topic	Timeframe
Accident Prevention Program, including on-the-job review of safe work practices	Upon hire; before initial job assignment
Fall Protection Work Plan	At each job site prior to permitting employees into work areas where fall hazards exist
First Aid Training	Every 2 years
Flagger Certification	Every 3 years
Forklift Operator - Initial Training	Before operation
Forklift Operator - Evaluation	Every 3 years or if operating vehicle unsafely
Hazard Communication/MSDS	At initial job assignment and whenever new chemicals are used
Ladders and Stairways	Before use; then as often as necessary to ensure employees retain knowledge
Personal Protective Equipment, including Fall Protection	When assigned; before using
Safety Meetings	Beginning of each job; then weekly
Scaffolds	Before use and when work conditions change
Welding	Before beginning job

10 –HAZARD COMMUNICATION

Hazard communication is a very important part of your employer's safety program. The purpose if to give employees the knowledge they need to properly handle hazardous materials. The information provided will help you avoid accidents and allow you to do your job more efficiently.

WISHA requires your employer to:

- maintain a list of all hazardous chemicals available on the job.
- ensure that containers are labeled.
- train you to recognize and safely handle hazardous materials.
- know what to do in case of an accident.
- train you to understand the material safety data sheets (MSDSs).

10A – Material Safety Data Sheets

The information you will need for the safe handling of chemicals and hazardous materials is contained on the material safety data sheets (MSDSs). WISHA requires an MSDS for every product containing a hazardous substance. The MSDSs must be centrally located for easy access. The purpose of the MSDS is to:

- identify the product;
- explain the physical and chemical characteristics of the hazardous material;
- explain the health hazards of the hazardous material;
- provide general precaution for safe handling;
- advise on the appropriate personal protective equipment;
- provide procedures for spills, cleanups and proper disposal of material and/or containers;
- explain emergency and first aid procedures; and
- list the name, address and telephone number of the manufacturer or responsible party that can explain additional information, including emergency procedures.

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List)	Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name	Emergency Telephone Number
Address (Number, Street, City, State, and ZIP Code)	Telephone Number for Information
	Date Prepared
	Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)

Section III — Physical/Chemical Characteristics

Boiling Point		Specific Gravity (H_2O = 1)	
Vapor Pressure (mm Hg.)		Melting Point	
Vapor Density (AIR = 1)		Evaporation Rate (Butyl Acetate = 1)	

Solubility in Water

Appearance and Odor

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL

Extinguishing Media

Special Fire Fighting Procedures

Unusual Fire and Explosion Hazards

(Reproduce locally) OSHA 174, Sept. 1985

An MSDS has a minimum of eight sections:

SECTION I IDENTITY

This section identifies the material or substance and provides information regarding the manufacturer, such as the address and an emergency telephone number.

SECTION II HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

This section lists the hazardous components found in the material or substance. In addition, this section contains information regarding any applicable WISHA worker exposure limits.

SECTION III PHYSICAL/CHEMICAL CHARACTERISTICS

This section provides the melting point, boiling point, solubility in water, vapor pressure, evaporation rate and other information regarding the substance or material. In addition, this section describes the material's appearance and odor, helping a person to identify if something is different about the substance or if the chemical composition has changed.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

This section contains the flash point and unusual fire and explosion hazards that apply to the substance or material. Information regarding fire fighting and extinguishing is also specified in this section.

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable		

Incompatibility (*Materials to Avoid*)

Hazardous Decomposition or Byproducts

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur		

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? Skin? Ingestion?

Health Hazards (Acute and Chronic)

Carcinogenicity: NTP? IARC Monographs? OSHA Regulated?

Signs and Symptoms of Exposure

Medical Conditions Generally Aggravated by Exposure

Emergency and First Aid Procedures

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled

Waste Disposal Method

Precautions to Be Taken in Handling and Storing

Other Precautions

Section VIII — Control Measures

Respiratory Protection (*Specify Type*)

Ventilation	Local Exhaust	Special
	Mechanical (General)	Other

Protective Gloves	Eye Protection

Other Protective Clothing or Equipment

Work/Hygienic Practices

SECTION V REACTIVITY DATA

This section provides information on the chemical reaction if one substance or material is mixed with other chemicals or with water or air.

SECTION VI HEALTH HAZARD DATA

This section provides information on how the substance could enter your body. It will also describe what the effects of exposure are and how to recognize the signs of exposure.

SECTION VII PRECAUTIONS FOR SAFE HANDLING AND USE

This section explains in detail what steps should be taken in the event of a spill, leak or chemical release. Additionally, this section provides information on the safe handling and storage of the material or substance. The section also prescribes the proper methods for disposal.

SECTION VIII CONTROL MEASURES

This section lists the personal protective equipment required for the handling and use of the material or substance. It will also tell you the proper amount of ventilation required for the material's safe use. In addition, this section will provide you with the proper work/ hygienic practices required.

10B – Container Labeling

All hazardous substance containers are required to be labeled. This should be provided by the manufacturer or by the supplier. If there is no label, report this to your supervisor, who will notify the supplier. Refer to the MSDS for information, regarding the properties and safe handling of the chemical. Substances placed in temporary containers such as gasoline cans also need to be labeled. The label should be prominently displayed and contain the following information:

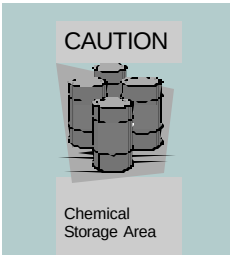
- the identity of the hazardous materials
- appropriate hazard warnings, such as “DANGER,” “WARNING” or “CAUTION.”
- the name and address of the manufacturer or the responsible party.

11 – SOLVENT AND ADHESIVES

Solvents and adhesives are some of the most hazardous substances that roof mechanics encounter. Because these materials are used so frequently, workers don't always realize the dangers they present. If proper precautions are not used, a worker can easily be overcome by their fumes or vapors or be severely burned. In this section, the proper precautions to avoid unnecessary injury are presented.

Remember to think through a task before you perform it. In most cases, common sense will be your best guide to avoiding problems.

11A –Solvents and Adhesives Storage



- Read the manufacturer's label or Material Safety Data Sheet (MSDS) for the required storage specifications.
- Fire extinguishers must be accessible at all times.
- Make sure that the containers are securely stored where the labels are easy to read. Post "No Smoking" signs. If several containers of the same material are stored in an area, one large and easy-to-read label may be placed in an obvious location.
- Always make sure the lids and tops of all solvents and adhesives are tightly closed before storing.
- Store the different solvents and adhesives separately and away from other chemicals.
- Immediately and promptly dispose of all empty pails and containers.
- Flammable materials should not be stored near building stairways or exits.

11B –Safe Handling

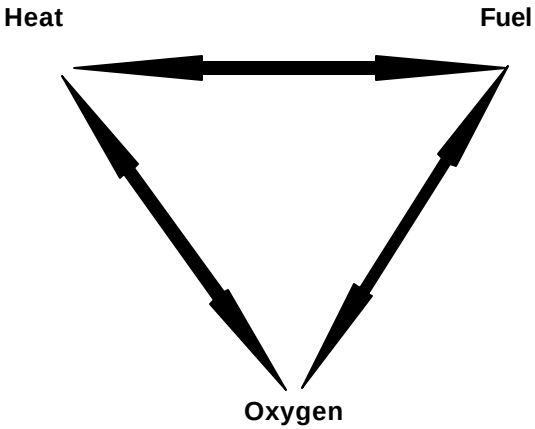
- When working with solvents or adhesives, always wear the proper personal protective equipment.
- Always check MSDS for proper gloves.
- Make sure the work area is well-ventilated. If the area is not well-ventilated, use fans to help circulate the air.
- Wear respiratory protection when required.
- Read the label and follow the manufacturer's recommendations for applications and handling.
- Never smoke around solvents and adhesives; the vapors can ignite.
- Avoid open flames.
- Always be aware of other trades in the work area. Acetylene, electric welders and other flame-producing equipment may ignite solvent vapors.
- Check to see that fire extinguishers are easily accessible.
- When cleaning tools, use nonsolvent-based cleaners, if possible. If you use solvents, remember to check the MSDSs and wear gloves, goggles and any other personal protective equipment required. Work in a well-ventilated area. Wear respiratory protection when required. Properly dispose of the rags used for cleaning.

12 – FIRE SAFETY

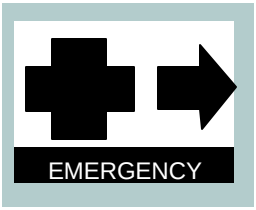
A fire can be deadly. By incorporating a few commonsense principles, fire hazards can be reduced significantly.

Remember: Fires start when the three elements of the fire triangle are present. These elements are: heat, fuel (wood, paper, gas or other flammables) and oxygen. Avoiding fires means not allowing all three to combine.

THE FIRE TRIANGLE



12A – Handling an Emergency



- Know how to exit a roof in case of fire.
- Know where the fire extinguishers are located.
- If you are trained in first aid or CPR, you may want to offer assistance in an emergency.

12B – Storage of Flammables

- Always keep flammables away from any ignition sources, such as heat, flames or smoking materials.
- Make sure there is good ventilation in the storage area.
- Always keep fire doors and walkways clear.
- Do not store flammable and combustible liquids near stairways or exits.
- No more than 25 gallons (94.75 l) of flammables or combustible liquids may be stored indoors in a room outside of an approved storage cabinet.
- No more than 60 gallons (227.4 l) of flammable and no more than 120 gallons (454.8 l) of combustible liquids may be stored in a single cabinet, and nor more than three cabinets may be located in a single storage area.
- Outdoor portable storage tanks containing flammable or combustible liquids must be stored at least 20 feet (6.1 m) from any building.
- Always keep flammable liquids in an approved safety container when not in use.
- Always bond and ground containers when transferring materials to prevent a buildup of static electricity, which potentially could create a spark. The bond wire connecting the two containers should be set up prior to the transfer. The ground wire should be connected to one of the containers and to a proper ground. The ground will eliminate any static electrical charges created.

12C – Fire Extinguishers

- Fire classes are based upon the item that is burning:
  - A—for fires involving wood or paper
  - B—for flammable liquids and gas fires
  - C—for electrical fires
  - D—for combustible metals, such as magnesium or sodium

- Be sure to use the right type of extinguisher. An ABC-rated fire extinguisher is the best to have on hand because it will put out almost all types of fire encountered in the roofing workplace.
- All fire extinguishers must be inspected monthly and records maintained indicating the date of inspection and the inspector's name or initials.
- Know where the fire extinguishers are located on each job and how to use them.
- Familiarize yourself with the operation of the fire extinguisher(s) on the job by reading the instruction labels.
- Memorize the PASS system for extinguishing a fire.
  - P—Pull the pin.
  - A—Aim the nozzle at the base of the fire.
  - S—Squeeze the handle.
  - S—Sweep from side to side to cover the entire fire.

12D – Propane Torches

Torches are extremely dangerous tools. Torch heads reach temperatures of 2,000°F (1093°C). A moment of carelessness can result in serious injury or property damage. Make sure you completely understand how to operate a torch before using one.

- Always inspect the torch head, valves, hoses, gauges, connection and fittings for any defects. Never use any equipment, including LP gas cylinders, unless they are in good working order.
- Observe all of the manufacturer's guidelines.
- Do not use torches near combustible materials. Be especially cautious on structures with wood decks or large amounts of lint and dust, such as laundries, paper mills, etc.
- Never leave a lit torch unattended.
- Never point a torch at anyone.
- Always keep propane cylinders at least 10 feet (3.05 m) away from any torch.
- Only use a spark lighter to ignite the torch; never use a match or cigarette lighter.
- When you are finished with the torch, close the propane container valve and allow the propane remaining in the hose to burn off.

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- The supervisor or his designee should walk the roof for at least one hour after the last torch has been turned off to check for hot spots and smoldering fires. It is also a good idea to check inside the building—especially the underside of the deck whenever possible—for early signs of fire.
- Wear leather gloves and eye protection when working with torches.

12E – Liquefied Petroleum (LP) Gas Cylinders

- Cylinders should be marked “flammable gas.”
- Cylinders should not be dropped or allowed to strike each other.
- When storing, using or transporting cylinders, keep them securely fastened in an upright position and be sure that the container valve is closed and covered with a safety cap or collar.
- Do not store LP cylinders indoors.
- Never hoist cylinders by attaching lines to valves or collars.
- Cylinders should be moved by means of a hand truck. If it is absolutely necessary to move one by hand, roll it on its edge; never drag it.
- Make sure the pressure regulator is properly adjusted and is not damaged.
- Check the hose prior to use for cuts, cracks or worn places.
- When in doubt, always consider cylinders to be full and handle them accordingly.
- When not in use, turn off the fuel supply at the tank.
- When in use, keep all LP gas tanks at least 10 feet (3.048 m) away from the kettle.
- Keep bulk propane and storage tanks at least 25 feet (7.620 m) away from the kettle, tanker or building.
- If a propane cylinder frosts, it means the cylinder is too small. Never turn it on its side or use a torch to defrost the cylinder.

12F – Application of Torch-Applied Modified Bitumen Membranes

When applying torch-applied modified bitumen membranes, be aware of the fire danger. Because of the amount of heat used for application, there is a greater fire hazard than in most other types of operations.

- Always wear the proper personal protective equipment. Check with your supervisor before starting.
- Make sure to have dry chemical or foam fire extinguishers readily available at every work area. Also, make sure everyone is trained in their operation.

- A supervisor should always conduct a fire watch for at least one hour after the last torch has been turned off. The supervisor should be looking for hot spots in the areas worked on that day. It is also a good idea to check the inside of the building for early warning signs of fire.
- Use extreme caution when torching around wood framing or wood substrates. Never torch directly to a flammable substrate.
- Remember to store the propane tanks and torches safely and securely at the end of the workday.
- Never direct a propane torch into a blind area.

13 – ELECTRICAL SAFETY

The use of electrical tools is common. They make many jobs easier and more efficient. Electricity presents additional hazards. Not only are electrical tools and power cords a hazard, everyone must also be aware of power lines and other sources of electricity found on a job site. It only requires a split second of carelessness for an electrocution to occur. All electrical tools must be protected by either a ground fault circuit interrupter (GFCI) or an assured grounding program.

13A – Ground Fault Circuit Interrupter

A ground fault circuit interrupter (GFCI) is designed to trip or interrupt electrical current very quickly so as to prevent shock or electrocution.

- Check the GFCI regularly with the “Test” and “Reset” buttons.
- If a GFCI is found to be defective, it should be immediately removed from service and replaced.
- A GFCI must be used to protect all electrical tools and extension cords. To accomplish this, it must be placed at the power source.

13B – Assured Grounding Program

An assured grounding program covers all receptacles that are not part of the permanent wiring of the building or structure, including all cord sets and any equipment connected by cord and plug. WISHA requires two tests. The first is a continuity test to ensure that the equipment grounding conductor is continuous. The second is performed on receptacles and plugs to make sure the equipment grounding conductor is connected to its proper terminal. These tests must be conducted quarterly for tools and cords and every six months for receptacles.

The following are safety requirements for extension cords:

- All extension cords are to be inspected before each day's use.
- Any cords that are frayed, cut or have exposed wires must be removed from service and tagged.
- Only use three-prong double-insulated extension cords.
- Make sure the grounding pin is present and connected. If not, the extension cord must be taken out of service.
- Extension cords should not be attached to the surface of any building.

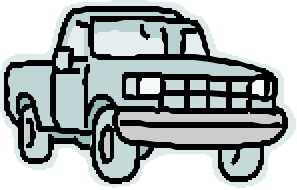
The following are safety requirements for tools:

- All power tools must be the three-pronged type, unless the tool is double-insulated and clearly marked as such.
- Tools that are not double-insulated must be included in the assured grounding program.

(continued on next page)

- Make sure the ground wire on any three-prong, non-double-insulated power tool is present and functioning properly. This can be checked with continuity testing.
- Check all cords. If the insulation is exposed in any way, the power tool or extension cord must be taken out of service.

14 – VEHICLE SAFETY



Safe driving is really about using common sense. Follow the rules of the road, drive within the speed limit, be alert at all times and maintain a safe distance between your vehicle and other vehicles. Driving defensively is the best way to keep yourself and your vehicle out of danger.

14A – Vehicle Operations

- Always check the load before you drive to ensure proper distribution, tie down and securement. If you are transporting LP gas cylinders, they must be secured in an upright position.
- Always have a fire extinguisher and a first aid kit in the cab of the truck.
- Be sure the backup alarm is functioning properly.
- When backing up, have an outside observer direct the truck if you are unable to see behind you.
- If you a towing a trailer, make sure the hitches and safety chains are in good condition and securely attached. Test the taillights and brakes to ensure that all are operational.
- When towing, remember to allow an extra margin of distance to stop.
- Use extra caution in adverse weather conditions.
- Close the kettle lid securely before towing.
- If you involved in an accident, report it to your office immediately.
- Learn and follow the requirements for record keeping and maintenance as specified by the DOT's Federal Motor Carrier Safety Regulations.
- Report all traffic violations to your company.
- Always wear your seatbelt.
- Observe all posted speed limits.
- When driving, always maintain a proper stopping distance between your vehicle and the car in front of you.

14B – ATVs

All-terrain vehicles (ATVs) are often used on large flat roof jobs. ATVs are a good method for transporting equipment and materials. However, there are special hazards you should be aware of when operating an ATV.

- Always follow manufacturer's recommendations for personal protective equipment.
- Do not operate an ATV unless you have been properly trained.
- Prior to each work shift, check for any mechanical problems.
- Familiarize yourself with the lay of the roof before beginning work.
- Make sure the weight constraints of the deck allow the use of an ATV and its load.
- Maintain reasonable speeds (approximately 5 mph [8 km/hr] to 10 mph [16 km/hr]) and don't make sharp turns.
- Designate a travel path where you can operate the ATV to avoid pedestrian traffic.
- Never pull excessive loads with an ATV.
- Make sure your clothes cannot get tangled in the ATV.
- Only one person should ride an ATV at a time.

14C – Vehicle Maintenance

Good vehicle maintenance is very important. A vehicle maintenance program will ensure that the vehicles you drive are operating safely and properly. In the end, you will have fewer mechanical problems and accidents and will be more efficient.

- All vehicles and equipment should be checked before each work shift for defects or mechanical problems. Any problems should be reported immediately.
- Thorough maintenance records should be kept for all vehicles.

15 – OTHER WISHA STANDARDS

In addition to Chapter 155, Safety Standards for Construction Work, you are required to comply with other regulations, depending on the type of work that you are doing. Below are some of these regulations and information about when you would be required to follow these rules. **Remember, this booklet covers only some common hazards. If you are uncertain about the safety of any job, ask your supervisor.**

Asbestos

To handle asbestos-containing material, you must be trained and be certified. The requirements for training and handling of asbestos are found in Chapter 296-65 WAC, Asbestos Removal and Encapsulation.

Ergonomics Rule

The purpose of this rule is to reduce employee exposure to specific workplace hazards that can cause or aggravate work-related musculoskeletal disorders (WMSDs). The regulation that covers these requirements is WAC 296-62-051, Ergonomics.

Hearing Conservation

Under certain conditions, you may be required to wear hearing protection and undergo audiometric testing. These requirements are covered in WAC 296-62, Part K, Hearing Conservation.

Lead in Construction

WAC 296-155-176, Lead, applies to all construction work where an employee may be occupationally exposed to lead.

Lock-out/Tag-out

Locking and tagging of circuits is required if an employee is exposed to contact with parts of fixed electric equipment or circuits which have been de-energized. The regulation that covers these requirements is WAC 296-155-429.

Permit-Required Confined Spaces

You and your company are required to perform all permit-required confined space (PRCS) activities in accordance with WAC 296-62, Part M, Confined Spaces.

Do not enter any confined space until properly trained and until all steps required by WAC 296-62, Part M, have been fulfilled.

Respiratory Protection

It may be necessary to wear a respirator to protect against recognized respiratory hazards. The testing, training, written program and fit-testing requirements can be found in WAC 296-62, Part E, Respiratory Protection.

16 – SUBSTANCE ABUSE PREVENTION

Statistics show that employees having problems with drugs and alcohol have a higher rate of accidents. Any person impaired on a job site is a danger to themselves and to fellow workers. In addition, substance abusers are absent more often, get less work accomplished and the quality of their work suffers. For these and other reasons, drugs and alcohol have absolutely no place in the work place—especially on the roof.

- Make sure you have a copy of your company's substance abuse prevention program. Read it and understand it. If you have questions, ask your supervisor.
- Ask your supervisor, if your company has an employee assistance program (EAP).
- The EAP is intended to get help for those who need it, not to punish.
- If you have a substance abuse problem, ask for help through the EAP. The information will remain confidential.
- If you are under the influence of any medication that could hinder you on the job, tell your supervisor. It may be better to stay at home or perform less hazardous work.

17 – HEALTH AND HYGIENE

Personal health and hygiene is an important part of your daily routine, both on and off the job. Improper hygiene could cause illness, which may result in lost productivity. Here are a few simple suggetions.

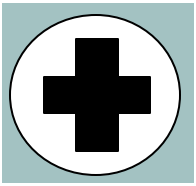
- Change and wear clean clothing on a daily basis.
- Always wash your hands before eating or smoking and immediately following work.
- Keep your shoes dry and wear clean socks daily. In the summer, wear cotton socks; wear layers in winter.
- Do not reuse any disposable ear plugs.
- Keep all personal protective equipment, such as face masks, respirators, goggles and reusable ear plugs clean and in good working condition.
- Do not trade or lend your personal safety equipment to others.
- Get plenty of rest on work nights.
- If you are sick, stay home until you have recovered. Going to work will only worsen your condition and you could infect other employees.

17A – Potable (Drinkable) Water

An adequate supply of potable (drinkable) water is required at all job sites.

- You must have a marked, dedicated and clean container to use for dispensing potable water.
- The container must be equipped with a tap to dispense fresh water.
- The container must have a lid that can be closed to prevent dipping cups into the water.
- Never drink directly out of the tap.
- Individual drinking cups should be provided. The cups must be stored in a sanitary container. The cups must be disposed of in a trash receptacle.
- Empty the waste container each day. Allow the container to dry before using it the next day.
- Never use the container to store tools or anything else at the end of the day.

18 – FIRST AID



Accidents and injuries require some type of first aid. If needed, call for medical assistance as soon as possible. Remember, always notify your supervisor of all accidents or injuries.

WISHA requires that all crew leaders, supervisors or persons in direct charge of one or more employees must have a valid first-aid certificate. Also, each employer must have a person holding a valid first-aid certificate at all worksite where a crew is present. (A crew is defined as two or more employees working at any worksite.)

First aid training must include the topics listed in WAC 296-800-15010.

First aid supplies must be available at every job site. The supplies must be appropriate to the work setting and easily accessible to all employees. Additionally, every vehicle used to transport work crews must be equipped with first aid supplies.